Vision for Integration into Overall Asset Management Strategy

Jonathan Marmillo

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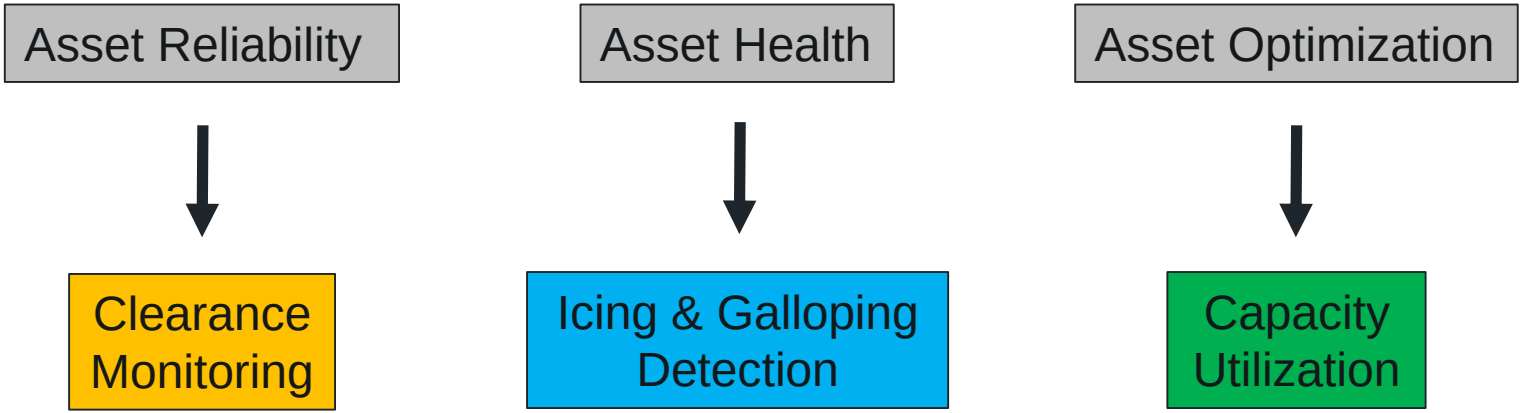
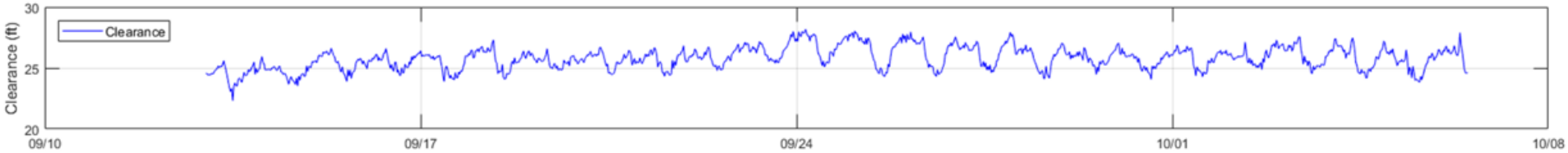
The Overall Asset Management Strategy

The Overall Asset Management Strategy



Asset Management - Clearance Monitoring



115kV, Southwest USA

Loading Pattern:
Early Morning Peak

Monitor & Trend
Conductor Sag

LiDAR Verification

True-Up PLS-CADD Models

Anomaly Detection &
Variance Algorithms

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Asset Management – Icing Detection

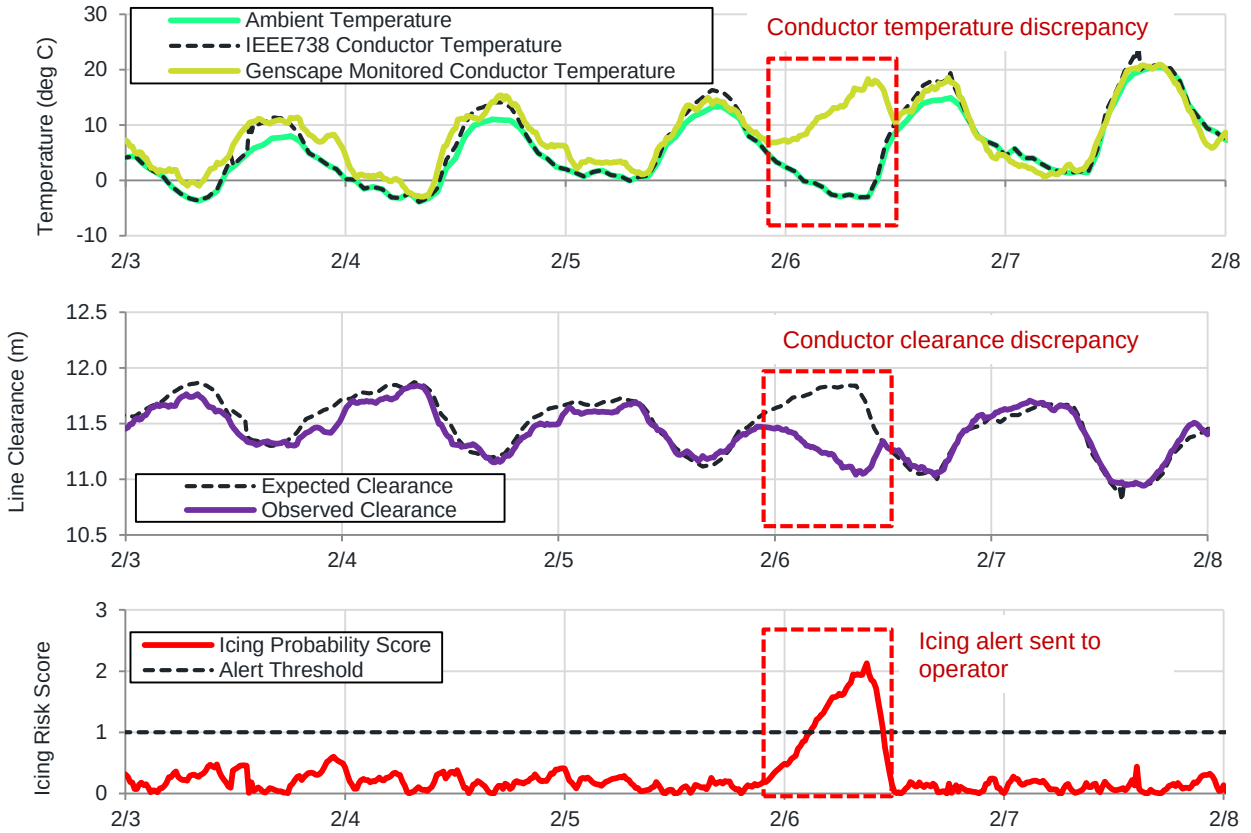
Ice Detection algorithm is based on a comparison of observed vs. expected:

- Conductor temperature
- Conductor clearance

…under actual loading and weather conditions.

Improve Situational Awareness

Prevent Asset Damage



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Asset Management – Galloping Detection

Galloping Detection algorithm is based on the detection of a low-frequency harmonic signature

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Galloping alert sent to operator

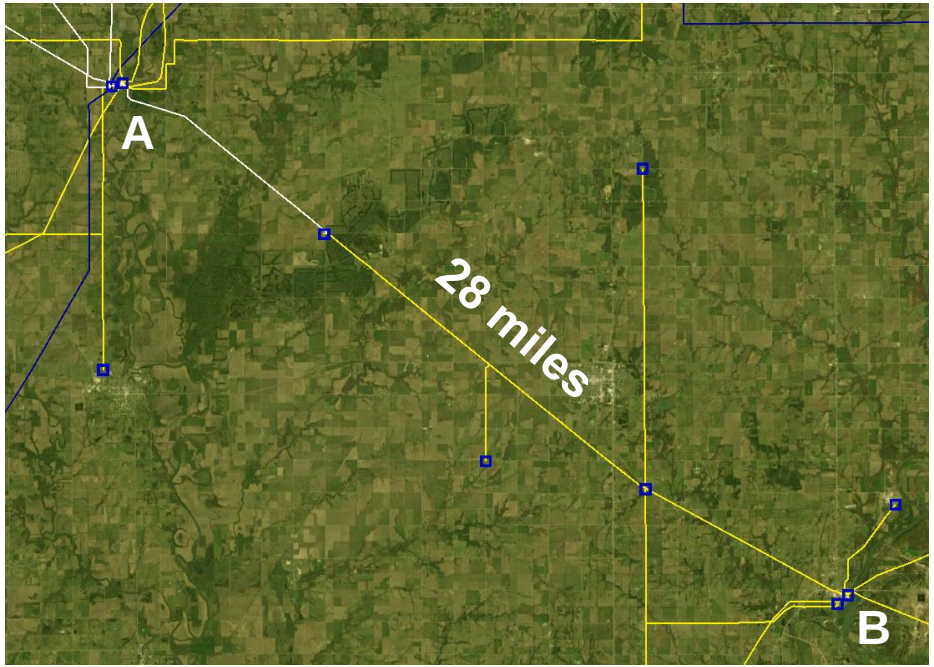
Improve Situational Awareness

Prevent Asset Damage

Asset Management – Capacity Utilization

CIGRE Grid of the Future 2016 Paper:
Model historical Dynamic Line Ratings for a 161kV Line and correlate to times of market congestion.

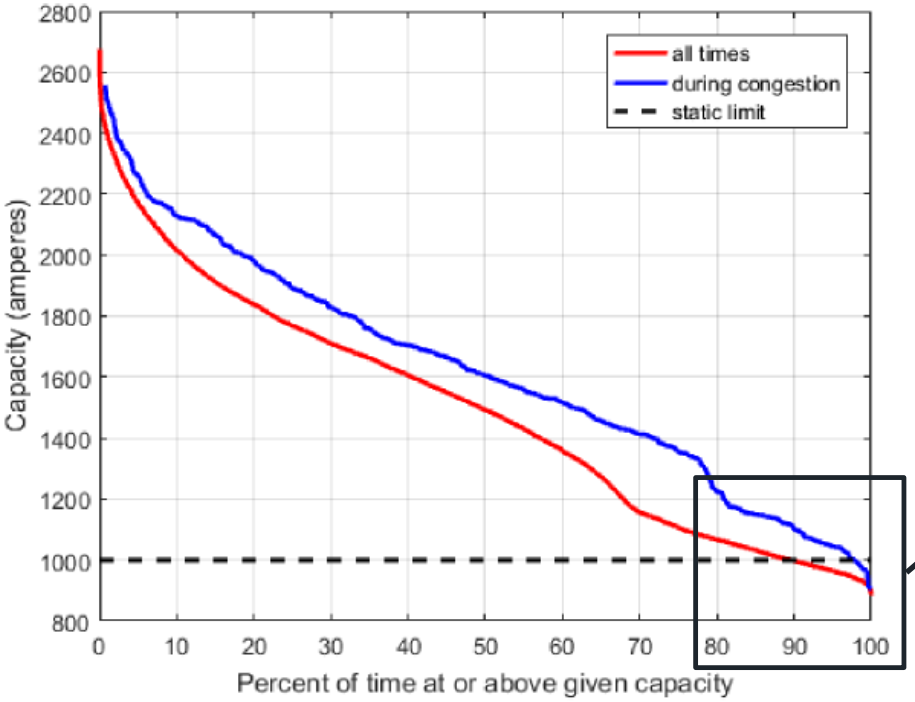
Primary Mode of Constraint:
Wind Driven Congestion

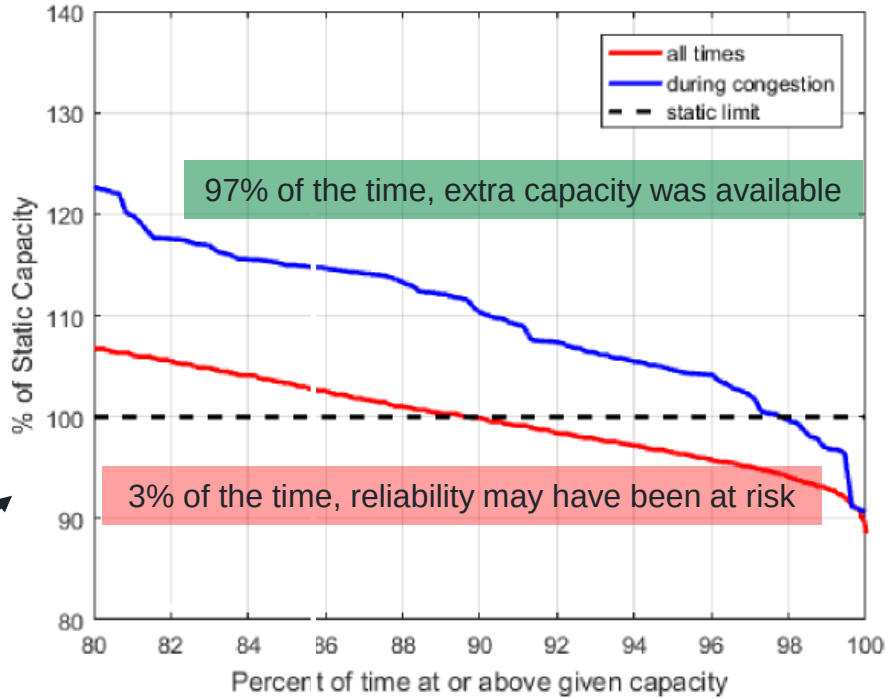


Engineering Assumptions:

Rating input parameter	Value for Static Line Rating	Value for Dynamic Line Rating
Conductor type	ACSR 795.0 Drake 26/7	
Conductor emissivity/absorptivity	0.6/0.6	
Conductor Max. Operating Temp	100 °C	
Solar irradiance date/time	June 10, Noon	*Based on actual date/time*
Ambient Temperature	40 °C	*Variable, NOAA data*
Perpendicular wind speed	0.6 m/s	*Variable, NOAA data (note, due to anemometer stall, includes some zero wind speeds)*

Asset Management – Capacity Utilization





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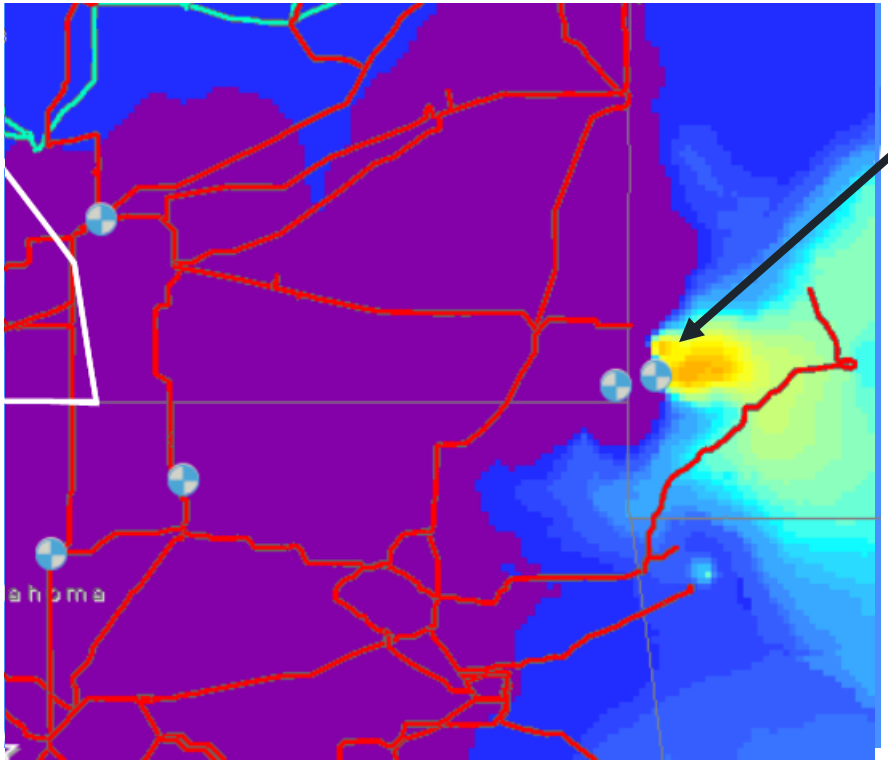
Asset Management – Capacity Utilization



Real-Time LMP Pricing Contour Map

Studied Line – Flow Gate

November 7th 2017 –
Later that day… 3:05pm MT

Binding Constraint: Breached

Shadow Price: < -$700

Peak Convective Cooling Hours

Asset Capacity Not Optimized

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